THE FILTERING PROCESS IN HOUSING IN BOSTON
1950 to 1960

by

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A study of rental units on a census tract basis in Boston, 1950 to 1960 was carried out to determine if the filtering process operated, and having determined that it did, to look at a number of population and housing characteristics in an effort to see if there was any connection between any of these characteristics and the filtering process.

Tracts where the filtering process could not be measured because of limitations in the data were eliminated.

Two methods were used to determine if filtering took place. The first method employed an index number to convert a tract's median rent into constant dollars. The difference in a tract's 1950 and 1960 median rent was examined to see if filtering took place. The second method expressed each tract's median rent in 1950 and in 1960 as a percentage of the median rent for Boston in 1950 and in 1960, and then the percentages were compared to see if filtering took place. The two methods produced virtually identical results.

The population characteristics that were examined are: population change, foreign stock, Negro migration, labor force composition, educational level, turnover, and income changes and rent-income ratios.

The housing characteristics that were examined are: vacancy rates in 1950, overcrowding, and substandard housing.

In general, the results were not conclusive. There seems to be some connection between population decrease, and income changes and rent-income ratios, with the filtering process, but investigations of the other characteristics indicated either no strong connection or the data was not conclusive.

Thesis Supervisor: Frederick J. Adams

Title: Professor of City Planning

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CHAPTER I

INTRODUCTION

This thesis is about the phenomenon that takes place in the housing market known as the 'filtering process.' Not very much is known about certain aspects of it, although it seems to play an important role in meeting consumer demands for housing. The only major case study that has been done was carried out by Leo Grebler in New York City's Lower East Side. Additional knowledge about it, based on case studies, would help to determine public policy on the kind of urban renewal treatment, the type of code enforcement, and the location and type of new housing. Information on where and why the filtering process operates would enable public decisions to be made on a more factual basis and lead to decisions that are more likely to be reasonable and therefore successful.

The range of inquiry is limited to rental units in the city of Boston from 1950-60. Although Boston's existing stock of housing is comparatively old, it will continue to be the most important component in the housing market for many years.

A. DEFINITION

The definition that will be employed for the purpose of this thesis is as follows:

> Filtering is a change over time in the position of a given dwelling unit or group of dwelling units within the distribution of housing rents and prices in the community as a whole.[1]

This differs from another commonly accepted definition that states that: "Filtering-down is a changing of occupancy as the housing which is occupied by one income group becomes available to the next lower income group as a result of a decline in market price, i.e., in sales price or rent value."[2] This definition was rejected because it includes an income criterion. Under the definition that has been accepted, only the relative change in rent or price is a necessary and a sufficient condition for filtering, and the succession of occupancy by lower income groups is not a part of it. Filtering then becomes a movement of dwelling units, and the test for it is in rent or price--not income.

Other writers have employed essentially the same definition as the one proposed by Fisher and Winnick. In an empirical study of the Lower East Side in New York

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[1]Ernest M. Fisher and Louis Winnick, "A Reformulation of the 'Filtering' Concept," Journal of Social Issues, VII, Nos. 1 and 2 (1951), 52.

[2]Richard U. Ratcliff, "Filtering Down and the Elimination of Substandard Housing," Journal of Land and Public Utility Economics (November, 1945), 330. This article is the same as part of Chapter 11 in Urban Land Economics 1st ed. (New York: McGraw-Hill Book Co., Inc., 1949) by the same author. Footnotes in this chapter will refer to the article rather than the book.

City, Leo Grebler defined filtering as "...a change over time in the position of a dwelling unit or a group of dwelling units within the hierarchy of rents and prices in the community as a whole."[3] He argues that rent-income ratios are not an adequate indicator of filtering because of the cyclical fluctuations in the relationship. Neither is the movement of rents relative to consumer prices an indicator because this kind of change only expresses the movement of one price relative to the movement of other prices.[4]

In a more recent article Ira Lowry defines filtering as "...a change in the real value of an existing dwelling unit."[5] He argues that occupancy may change as a consequence of filtering, or it may not. Filtering-up stops when the price of an existing unit of given quality exceeds the supply price of a new unit of that quality, and filtering-down stops when expected revenue no longer covers fixed costs, at which time the dwelling unit only has scrap value. There is a gradual and general deterioration in the quality

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3Leo Grebler, Housing Market Behavior in a Declining Area: Long-Term Changes in Inventory and Utilization of Housing in New York's Lower East Side (New York: Columbia University Press, 1952), 62-3.

4Ibid., pp. 59-63.

5Ira S. Lowry, "Filtering and Housing Standards: A Conceptual Analysis," Land Economics, XXXVI, No. 4 (November, 1960), 362.

of a dwelling unit over time, so that each unit moves lower down on the quality scale. The effectiveness of filtering depends on the speed of the value-decline relative to the quality-decline, although individual owners and tenants will respond to changes in the market with behavior which can accelerate or delay the physical deterioration of the dwelling unit.[6] Because Lowry was interested in constructing a model to study filtering, the market mechanism which he describes is probably more responsive than the actual market mechanism.

B. HISTORICAL BACKGROUND

In the 1930's the argument was advanced in some quarters that the filtering process could substantially eliminate substandard housing in our cities and thus create a general improvement in housing standards. It was argued that all this could be achieved within the framework of the private housing market, and further, that direct government programs which provided subsidized new housing for lower or middle-income families, would interfere with a market process that would normally provide second-hand housing for these families at prices within their means.[7] If substandard housing was removed and replaced directly by new housing

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[6]Lowry, pp. 362-64.

[7]Lowry, p. 362. Lowry records this position but opposes it.

for low-income families (public housing), the values of the housing units at the higher level would be sustained since there would be no market into which they could fall.[8]

This argument was demolished when it became apparent that the filtering process was not significantly eliminating substandard housing, and the federal government officially rejected it with the adoption of the Housing Act of 1937. Many reasons were advanced for this failure.

First, it is necessary to have some excess of housing supply over housing demand at the level from which the filtering is to originate. This surplus or excess can arise from either an increase in supply or a decrease in demand. If the original surplus is dissipated and absorbed before it reaches the lowest stratum, no substandard housing will be replaced. Because of the law of supply and demand, the surplus housing checks the production of new housing. In the long run a surplus of units that accumulates at the bottom of the market will probably have an inhibiting effect on new construction, no matter at what level the new building is taking place.[9]

Second, if the filtering process is to operate, it is

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[8]Ratcliff, p. 330.

[9]Ibid., p.325.

necessary to eliminate at the bottom of the market roughly the same number of units which are added at higher levels and still keep the surplus so that rents will be kept down. Because of the huge amount of existing substandard housing, the rate of filtering, and thus the rate of the value-loss of houses would have to be greatly increased in order to absorb the existing substandard units and the additional ones that would be added over time. Filtering tends to produce substandard housing and blight because the quality of the house tends to diminish over time.[10]

Third, in the filtering-down process, a large number of houses are bound to lose their utility for such reasons as: too many or too few rooms, poor layout, rooms too large or too small, etc.[11]

Fourth, filtering-down begins from too small a supply since there are relatively few families with high incomes.[12]

Fifth, if houses are to filter-down to low-income families, there must be a surplus of houses and a relative decline in value to a price level such that these families can benefit from the houses in terms of price and type of accommodation. Price inadequacies at the middle-income level

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[10]Ratcliff, p. 324.

[11]Miles Colean, American Housing: Problems and Prospects (New York: The Twentieth Century Fund, 1944), p. 185.

[12]Ibid., p. 185.

necessarily reduce the number of dwellings which could decline in value and reach lower-income families. In addition, there are other barriers to the filtering process, such as geographical variations between supply and demand, tenure differences, and group prejudices.[13]

Lastly, Rodwin, speaking about Boston, notes that some units were built as workingmen's or middle-income houses and have maintained that status for long time periods.[14]

In summing up the housing picture in Boston as of 1950, Rodwin said,

> ...the increasing inability to provide sufficient houses at the right price for middle-income groups, particularly since World War I, coupled with erratic, reversible residential value fluctuations has made the filtering down of houses a fundamentally inadequate and unreliable supply mechanism.[15]

C. PURPOSE AND SCOPE

The purpose of this study is: (1) to determine if filtering took place in Boston 1950-60, and (2) having determined that it did, to look at a number of population and housing characteristics to determine if there are any strong connections between these characteristics and the filtering process. The study starts with the assumption that

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[13]Lloyd Rodwin, Housing and Economic Progress: A Study of the Housing Experiences of Boston's Middle-Income Families (Cambridge, Mass.: Harvard University Press and the Technology Press, 1961), p. 183.

[14]Lloyd Rodwin, "The Paradox of Boston's Middle Income

filtering-down will not adequately meet the housing needs of the low-income segment of the population and pushes in another direction. If strong connections do exist between several population and housing characteristics and the filtering process, then this has several implications in terms of public policy with respect to such things as: the determination of whether the filtering process will operate in a given area, the determination of the type of urban renewal treatment, the determination of relocation housing needs, the determination of the type of code enforcement, and the determination of the location and type of new housing.

The characteristics that were considered are grouped into three categories: (1) the neighborhood location of the census tracts, (2) population characteristics, and (3) housing characteristics.

(1) Neighborhood Location of the Census Tracts

It was found that while both East Boston and South Boston have low rents, all the tracts in East Boston filtered-down with one exception, and all the tracts in South Boston did not filter, again with one exception.

(2) Population Characteristics

a. Population Change

Every tract studied lost population between 1950 and

Housing Progress," Appraisal Journal (January, 1951), 49.

[15] Ibid., p. 50.

1960. The two tracts with the greatest percentage loss filtered-down, while none of the nine tracts which lost less than ten percent of their population did so--they did not filter, except for one which filtered-up.

b. Foreign Stock

There seems to be a very slight tendency for tracts with foreign populations to filter-down, but the data is generally inconclusive.

c. Negro Migration

Not enough of the tracts studied experienced a large Negro in-migration to form a definite conclusion. Of the seven tracts which did experience an in-migration, two filtered-down, three did not filter, and two filtered-up.

d. Labor Force Characteristics

No significant connection seems to exist between the filtering process and a tract's labor force composition.

e. Educational Level

There seems to be a strong connection between the rent level and the educational level, i.e., the higher the rent paid, the higher the educational level, but no connection between the filtering process and the educational level.

f. Turnover

There seems to be no connection between the filtering process and turnover rates (percent of people who moved between 1955 and 1960).

g. Income Changes and Rent-Income Ratios

Real income increased slightly less than the city average in those tracts which filtered-down and slightly more than the city average in those tracts which did not filter.

The rent-income ratio decreased in five tracts and all five filtered-down. In the eight tracts where the rent-income ratio increased, six did not filter and the other two filtered-down.

Neither trend is especially strong, based on the data that was used.

(3) Housing Characteristics

a. Vacancy Rates, 1950

Rent control was in effect until December, 1955 so vacancy rates are somewhat unrealistic. Based on available data, they were low in 1950, but every tract lost population during the decade.

b. Overcrowding

A strong verification of the thinning-out process emerged, but no significant connection between the extent of filtering and thinning-out appeared.

c. Substandard Housing

The number of substandard units declined in most tracts, but there appears to be no connection between the filtering process and substandard housing.

D. METHODOLOGY

The working unit for this study is the census tract, which the Bureau of the Census defines as "...small areas into which large cities and adjacent areas have been divided for statistical purposes.... (Census tracts) were generally designed to be relatively uniform with respect to population characteristics, economic status, and living conditions."[16]

Only the study of rental units was completed. An attempt, which was abandoned, was made to study owner-occupied units, and this is reviewed in Appendix A. The Bureau of the Census defines a housing unit as owner occupied "... if the owner or co-owner lives in the unit, even if it is mortgaged or not fully paid for. All other units are classified as 'renter occupied,' whether or not cash rent is paid."[17]

Because the working unit is the census tract, rather than individual dwelling units, the study deals with only a specialized aspect of filtering--groups of dwelling units. Measurements are of net changes within census tracts.

Chapter II deals with the problem of eliminating those census tracts where filtering cannot be isolated and thus

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[16]U.S. Bureau of the Census, U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18, U.S. Government Printing Office, Washington, D.C. 1962, p. 1.

[17]1960 Census of Population and Housing, Boston SMSA, Census tracts, p. 6.

leads to a selection of those census tracts where filtering could have occurred. There were five steps of elimination carried out in Chapter II, and the result is that there were 63 tracts of the more than 150 in the city of Boston where filtering could have occurred.

The first step was relatively simple. All those tracts followed by the letters 'CV' meaning 'Crews on Vessels' were eliminated. Vessels were neither of great importance nor interest.

Second, all those tracts where new construction between 1950 and 1960 amounted to one percent or more were eliminated, because new construction tends to distort the median values in 1960. The concern in this study was with units that existed at the beginning of the decade under study and hence accounted for the median figure at both endpoints.

Third, in those tracts where there were less than 200 housing units in 1950 or 1960, no median rent was given. Since filtering by definition depends on median rent, all those tracts were eliminated.

Fourth, those tracts where public housing amounted to one percent or more of the total number of rental units were eliminated because of the peculiar nature of their rent determination.

Fifth, because of the definitional change from dwelling unit in 1950 to housing unit in 1960, median

figures are distorted in some tracts, so these were eliminated.

Chapter III deals with determining the extent of filtering in the census tracts remaining at the end of Chapter II. Two methods were used to determine the extent of filtering. Both methods use the median contract monthly rent for each census tract. "Contract monthly rent" as defined by the United States Bureau of the Census is the "rent agreed upon regardless of any furnishings, utilities, or services that may be included. Renter-occupied units for which no cash rent was paid were excluded from the computation of the median."[18] The 1960 median does not include vacant units while the 1950 median figure does, taking as the rent for the vacant units, the monthly rent asked at the time of enumeration. Comparison of the medians however, should not be greatly affected by the vacant units included in 1950 and not in 1960.

A better figure is obtainable in the 1960 census, namely the median gross rent, which is the "contract rent plus the average monthly cost of utilities (water, electricity, gas) and fuels such as wood, coal, and oil if these items are paid for by the renter in addition to contract rent."[19] This is a somewhat more reliable figure because it eliminates rent differentials resulting from varying practices with

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[18]1960 Census of Population and Housing, Boston SMSA, Census tracts, p.7.

[19]Ibid., p. 7.

respect to the inclusion of utilities as part of the rental payment. Unfortunately, data on gross rent was not collected in the 1950 census, so contract rent, which is comparable over both censuses was used. Any time that the word 'rent' is used in the remainder of this thesis, the reference is to contract rent.

The first method of determining filtering leads to an index number which was used to convert 1960 median rents to 1950 dollars. Then the two rents in each census tract were compared. If the 1960 rent was lower than the 1950 rent in terms of constant dollars, then filtering-down occurred. If the two were not significantly different, then no filtering occurred; and if the 1960 rent was higher than the 1950 rent, filtering-up occurred. The results of this method indicated that 24 tracts of the total of 63 filtered-down, 36 did not filter, and 3 filtered-up.

The second method was used as a check on the first, and it proved to be a more sensitive measure. It was used by Leo Grebler in his study of New York's Lower East Side. The median rent for each census tract was expressed as a percent of the median for the city of Boston as a whole in both 1950 and 1960. If the percentage in 1960 was lower than the percentage in 1950, filtering-down occurred. If the two percentages were approximately the same, no filtering occurred; and if the 1960 percentage was higher than the 1950 one, filtering-up occurred.

Both these methods yielded identical results with respect to the determination of which tracts filtered-down, which did not filter, and which filtered-up except for one census tract which was on the borderline and was assumed to be in the 'did not filter' category.

Chapter IV looks at the population and housing characteristics noted in the previous section, and Chapter V contains the conclusions.

CHAPTER II

SELECTION OF THOSE CENSUS TRACTS WHERE FILTERING COULD HAVE OCCURRED

The purpose of this chapter is to isolate those census tracts where filtering could have occurred. Chapter III deals with determining whether any filtering actually took place. The method used in this chapter is to eliminate those tracts where filtering cannot be isolated, given the limitations of existing data. Tracts were eliminated on the basis of five criteria.

First, the 1960 census included tracts followed by the letters 'CV' meaning 'Crews on Vessels.' Vessels were neither of great importance nor interest, so they were eliminated.

Second, all those tracts where new construction 1950-60 amounted to one percent or more of the total number of rental units were eliminated. This means that the housing stock that remains was a part of the housing market throughout the decade under study. New construction, when added to the housing market, does play a part in the filtering process but its addition would distort figures for 1960. One of the probable effects of this step is to eliminate areas that might have filtered-up. New construction is one index of the upgrading of an area, but filtering by definition refers to existing units and not to new units

which replace old ones. A new apartment building which replaces an old one is not an example of filtering. Of the more than 150 census tracts in the city of Boston, excluding the 'CV' tracts, 51 tracts were eliminated on this criterion.

Third, in any tract where there were less than 200 housing units in either 1950 or 1960, no median rent is given. Because the determination of filtering depends on rent, any tract where the median rent was not available was eliminated. This resulted in the elimination of 8 more tracts.

Fourth, 9 tracts were eliminated because they contained public housing that amounted to one percent or more of the total number of rental units for the tract. Many tracts with public housing were eliminated under the second criterion on new construction, and most of the tracts eliminated here contain public housing built prior to 1950. These tracts were eliminated because of the peculiar nature of the determination of their rents.

Fifth, because of the change in definition from the 'dwelling unit' concept in 1950 to the 'housing unit' concept in 1960, many one-room units were counted in 1960 and not in 1950.

For the 1960 census, the census bureau adopted the concept of the 'housing unit' whereas it used the concept of the 'dwelling unit' for the 1950 census. The housing unit definition was designed to include all private living quarters which the dwelling unit definition did not do.

The Census Bureau, in explaining the difference between the two definitions said:

> Living quarters classified as housing units in 1960 but which would not have been classified as dwelling units in 1950 tend to be clustered in tracts where many persons live separately in single rooms in hotels, rooming houses, and other light housekeeping quarters. In such areas, the 1960 housing unit count for an individual tract may be higher than the 1950 dwelling unit count even though no units were added by new construction or conversion.[20]

The addition of many one-room units to the 1960 figure tends to lower the median rent relative to the 1950 figure. If the figures were taken literally, they indicate an increase in the number of housing units and a decrease in population. This definitional problem resulted in the elimination of 19 more tracts.

The result of the five steps of elimination was to leave 63 tracts of the more than 150 in the city where filtering could have occurred. The next problem was to determine in which tracts filtering occurred.

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[20] 1960 Census of Population and Housing, Boston SMSA, Census tracts, p. 5.

CHAPTER III

DETERMINING THE EXTENT OF FILTERING

Two methods were used to determine filtering. The first employs an index number to convert current median rents into constant dollars, and the second, developed by Grebler, uses a technique which expresses the median rent for each tract as a percent of the median rent for the city.

A. THE INDEX NUMBER METHOD

Table III-1 indicates the number of housing units in 1960 and dwelling units in 1950, and the percent of the total number of units for each. The tracts are grouped according to their median rents.

Table III-1. Number and Percent of Dwelling and Housing Units 1950 and 1960 Grouped by Median Rents

Median Rent (in dollars)	No. of Units 1960	% of Total Units 1960	No. of Units 1950	% of Total Units 1950
15-19	0	0	2,660	4.6
20-24	0	0	11,766	20.2
25-29	1,350	2.7	16,022	27.4
30-34	3,591	7.1	13,740	23.5
35-39	8,672	17.1	7,737	13.2
40-44	5,363	10.6	5,753	9.8
45-49	2,484	4.9	740	1.3
50-54	7,113	14.0	0	0
55-59	6,882	13.5	0	0
60-64	8,795	17.3	0	0
65-69	4,349	8.6	0	0
70-74	1,382	2.7	0	0
75-79	749	1.5	0	0
TOTAL	50,940	100.0	58,418	100.0

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office, Washington, D.C., 1962, and similar 1950 volume.

The number of units in 1960 does not equal the number of units in 1950 for five main reasons: (1) the change in definition from dwelling unit to housing unit which tends to make the 1960 figure higher, (2) the vacancies that are included in 1950 but not in 1960, which tend to make the 1950 figure higher, (3) new construction of units which tends to make the 1960 figure higher, and (4) the great excess of mergers over conversions which tends to make the 1950 figure higher.and (5) demolitions.

Those tracts where the definitional change leads to obviously false conclusions have been eliminated. The vacancy problem cannot be eliminated with the data that is available, and new construction in every tract is less than one percent. It would seem therefore, that conversions are the major reason for the difference and vacancies, which were low in 1950 make the difference somewhat larger.

By analyzing the frequency distributions in Table III-1 using the percentage figures, it is possible to roughly compensate for the difference in the number of units. The two 100 percent figures are assumed to be from the same base and equal, or stating it in other words, they are assumed to be two different-sized samples from the same universe.

Adding the percentages for the categories $25-$29 in 1960 yields a sum of 27% which is roughly equal to the 25% total obtained by adding the percentages for the categories

$15-$24 in 1950. The range in 1960 is $14 while the range in 1950 is $9. This would seem to imply that the 1950 units shifted to a wider range in 1960.

Continuing the same kind of analysis by adding the percentages for the categories $40-$54 in 1960 yields 30% which roughly compares with the 27% from the $25-$29 category in 1950. The range is $14 in 1960 and $4 in 1950 which again seems to imply that the 1950 units shifted to a wider range in 1960.

The $55-$69 categories in 1960 yield a sum of 39% while the $30-$39 categories in 1950 yield 37%. The 1960 range of $14 is wider than the 1950 range of $9 so again the same kind of shift seems to have occurred.

The same kind of analysis yields 4% for the $70-$79 categories in 1960 and 11% for the $40-$49 categories in 1950. The range in both cases is $9 but the percentages are further apart than in the previous steps. This suggests that perhaps conversions and vacancies are not equally distributed, but for this crude kind of preliminary analysis a difference of 7% is not believed to be critical.

A weighted mean was calculated for the 1950 and the 1960 distributions by multiplying the median rent for each tract by the number of rental units in the tract, adding the results together, and dividing by the total number of rental units in each distribution. For 1950 the weighted mean was $29.70 and for 1960 it was $50.70. The two means are assumed

to be equal relative to their respective years, so that the difference is the result of the inflation of the dollar. By dividing the 1960 mean by the 1950 mean an index of 1.71 is reached. This index provides a method for converting 1960 median rents into 1950 dollars.

The index of 1.71 was derived from the census tracts that survived the elimination rounds of Chapter II. It is interesting to compare this index with the two indices available from the Bureau of Labor Statistics, of the United States Department of Labor. Using just the rent portion of the Consumber Price Index for the United States yields an index of 1.32. The same figure for just the city of Boston as a whole is 1.44.[21] The second index takes into account the fact that Boston had rent control which ended in December, 1955.

After the 1960 median rents were converted by means of the index into 1950 dollars, the two median rents for each tract were compared. The results are shown in Appendix B along with the results of the second method. It was assumed that a change of plus or minus one constant dollar was not significant. Of the 63 tracts studied, 24 tracts filtered-down, 36 tracts did not filter, and 3 tracts filtered-up.

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[21]U.S. Bureau of the Census, Department of Commerce, Statistical Abstract of the United States, 1961, 82nd Annual Edition (Washington, D.C.: U.S. Government Printing Office, 1962), pp. 334, 340.

B. GREBLER'S PERCENTAGE METHOD

As a check on the index number method of determining filtering, a method proposed by Leo Grebler[22] in his study of New York's Lower East Side was used. The two methods produced identical results, except for one tract. The median rent in each census tract is expressed as a percent of the median rent for the city of Boston as a whole in both 1950 and 1960. If the percentages were approximately the same, then no filtering took place; if the percentage was lower in 1960 than in 1950, then filtering-down took place; and if the percentage was higher in 1960 than in 1950, filtering-up took place. Plus or minus three percent was taken as the range of no significant filtering. There is only one tract where the two methods do not agree, and this was on the borderline so it was put in the 'did not filter' category.

The results of both methods are shown in Appendix B, where the tracts are arranged from the maximum amount of filtering-down to the maximum amount of filtering-up according to Grebler's method, which proved to be the more sensitive of the two.

Chapter IV examines a number of population and housing characteristics with respect to the kind of filtering that took place.

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[22]Grebler, pp.62-3.

CHAPTER IV

POPULATION AND HOUSING CHARACTERISTICS

A. INTRODUCTION

The statistics presented in this chapter were derived from the 1950 and 1960 censuses of population and housing. The census bureau presents statistics for the tract as a whole, while this thesis deals with rental units, therefore conclusions about rental units were drawn from data that represents whole tracts. However, in every tract studied, rental units constitute over 50 percent of the total number of housing units and in every tract but three, they represent at least 60 percent of the total.

The other side of this picture points up one of the problems that was encountered with owner-occupied units. Conclusions about less than one-half of the total number of units would have had to be drawn from data representing whole tracts. This is discussed in Appendix A.

1. NEIGHBORHOOD LOCATION OF THE CENSUS TRACTS

As Table IV-1 indicates, both East Boston and South Boston have relatively low rents but all the tracts in East Boston except one filtered-down, while the majority of tracts in South Boston did not filter at all. For the most part, tracts in Dorchester did not filter. In Roxbury, some tracts filtered-down and some did not filter.

The table is not intended to represent the amount of

Table IV-1. Kind of Filtering by Neighborhood

Neighborhood	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up	Range of Rents, 1960
East Boston	9	8	1	0	$25-$44
South Boston	10	1	9	0	$25-$54
Roxbury	8	4	4	0	$30-$69
North End	4	2	2	0	$30-$39
South End	2	1	1	0	$35-$44
Charlestown	4	2	2	0	$35-$49
Dorchester	18	4	13	1	$50-$79
Jamaica Plain	4	1	3	0	$45-$64
Parker Hill-Fenway	4	1	1	2	$40-$74
TOTAL	63	24	36	3	

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office, Washington, D.C., 1962. Neighborhood boundaries determined from United Community Services of Metropolitan Boston, Report of the Long Term Planning Committee, Boston, 1960, p.8.

filtering that took place in terms of number of dwelling units. It does indicate the kind of filtering (whether a tract filtered-down, did not filter, or filtered-up). It only includes the 63 tracts under study and probably tends to leave out a number of tracts which had new construction amounting to one percent or more of the total number of rental units, which filtered-up.

B. POPULATION CHARACTERISTICS

1. Population Change

If there is a large population decrease, then the tendency for landlords is to lower rents in order to fill

Table IV-2. Kind of Filtering by Population Decrease

% Pop. Decrease 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
-50% or more	2	2	0	0
-40% to -49%	2	0	2	0
-30% to -39%	7	3	4	0
-20% to -29%	20	9	11	0
-10% to -19%	23	10	11	2
up to -9%	9	0	9	1
TOTAL	63	24	36	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960, Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office Washington, D.C., 1962, and similar 1950 volume.

vacancies, but every tract studied lost population from 1950-60. Population decrease might be part of the explanation for the two tracts in the minus 50 percent or more category, both of which filtered-down. Of the 9 tracts which had a population decrease of less than 10 percent, none of them filtered-down.

2. FOREIGN STOCK

Foreign stock is defined as the foreign-born population combined with the native population of foreign or mixed parentage.[23]

Of the 63 tracts, 30 had a foreign stock population of 50 percent or more of the total tract population in 1960. The term 'foreign stock' was not used in the 1950 census, so

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[23] 1960 Census of Population and Housing, Boston SMSA, Census Tracts, p.3.

comparisons were not possible. Of the 24 tracts which filtered-down, 14 had a foreign stock population of 50 percent or more; 15 of the 36 tracts that did not filter had a foreign stock population of 50 percent or more; and one of the 3 tracts which filtered-up had a foreign stock population of 50 percent or more. From this it was concluded that tracts that have a foreign population of 50 percent or more, have a very slight tendency to filter-down. The data is not conclusive enough to make this a strong conclusion.

3. NEGRO MIGRATION

The question investigated was: what happens when an area undergoes a large Negro in-migration. One hypothesis that is frequently heard is that a Negro in-migration will cause filtering-down to occur, especially if the area was predominantly white.

Three tracts had a small Negro population in 1950 and experienced a large Negro in-migration. In these three cases the area was predominantly white and by 1960 was predominantly Negro (less than 10% Negro in 1950 and over 50% Negro in 1960). Of these three tracts, one filtered-down and the other two filtered-up.

Four other tracts experienced a large Negro in-migration, but they started with a higher percentage of Negroes in 1950 (15% to 37% Negro in 1950 and 58% to 81% in 1960). Of these four tracts, one filtered-down, and the other three did not filter.

Of the 7 tracts mentioned that experienced a large Negro in-migration, 2 filtered-down, 3 did not filter, and 2 filtered-up. There are not enough cases to draw any strong conclusions.

In a study carried out in Philadelphia, Chester Rapkin and William Grigsby[24] found that as the proportion of Negroes in a mixed area increases, the percent of whites who will consider the area as a place of residence declines. In terms of the filtering process, white demand decreased, but if Negro demand was large enough to create even more demand than previously, then rents would be forced up and filtering-up would occur.

Rapkin and Grigsby favor what they term the "soft spot" theory, which claims that the threat of Negro entry is seldom the cause of price declines, but that Negroes tend to enter areas in which white demand has already been decreasing for other reasons and therefore sales had begun to weaken and prices slacken. Since every tract lost population, white demand probably decreased. The Rapkin and Grigsby study was of ownership patterns and not rental patters which are likely to be somewhat different because of the limited time-period of a lease as compared to the long-term kind of arrangement that ownership entails.

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[24]Chester Rapkin and William G. Grigsby, The Demand for Housing in Racially Mixed Areas. Berkeley: University of California Press, 1960, p. 101.

4. LABOR FORCE CHARACTERISTICS

The number and percent of each tract's male labor force in each of two categories--craftsmen, foremen, and kindred workers; and service workers, except private household workers, were examined. In 1950, the first category made up 20 percent of the city's total male labor force and it decreased to 18 percent by 1960. For service workers, except private household workers, the percentages were 13 percent in 1950 and 12 percent in 1960. These two categories were selected because it was felt that they would give a quick picture of the tract's labor force composition without examining every one of the 9 possible categories for both sexes. They represent the first and third largest categories for the city as a whole.

Table IV-3 indicates the kind of filtering by each category.

Table IV-3. Kind of Filtering and Labor Force Characteristics

Craftsmen, Foremen, and Kindred Workers

% Change in Composition 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
more than 3%	4	1	3	0
plus or minus 3%	37	16	19	2
less than -3%	22	7	14	1
TOTAL	63	24	36	3

Service Workers, except Private Household

% Change in Composition 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
more than 3%	7	3	3	1
plus or minus 3%	48	18	28	2
less than -3%	8	3	5	0
TOTAL	63	24	36	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office Washington, D.C., 1962, and similar 1950 volume.

The greatest number of tracts in each employment category fall into the plus or minus 3 percent category and [illegible], did not filter. The percentages did not change very much for the city as a whole and for the most part, they did not change in the tracts that were studied. The main conclusion seems to be that no significant connection exists between the filtering process and the labor force composition of the tract.

5. EDUCATIONAL LEVEL

Educational level was measured by the median number of school years completed for each tract.

Several things are interesting to note from Table IV-4. In 1960 only 10 of the 63 tracts were above the median figure of 11.2 years for the city of Boston. In 1950, 13 of the tracts were above the city median of 11.0 years. In general, the higher the rent, the higher the educational level, which

Table IV-4. Kind of Filtering by Differences in Educational Level, 1950-60

Differences in Educational Level, 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
No. Which Decreased	25	8	15	2
No. Which Did Not Change	8	5	3	0
No. Which Increased by .1 or .2 yrs.	10	5	4	1
No. Which Increased by .3 yrs. or more	20	6	14	0
TOTAL	63	24	36	3

Table IV-5. Kind of Filtering by Number of Tracts Which Failed to Equal, Equalled, or Exceeded the Increase of .2 years for the city of Boston

Differences in Educational Level, 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
No. Which Changed by .1 yrs. or less or decreased	38	15	21	2
No. Which Increased by .2 yrs.	5	3	1	1
No. Which Increased by .3 yrs. or more	20	6	14	0
TOTAL	63	24	36	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office Washington, D.C., 1962, and similar 1950 volume.

was expected.

Since the median figure for Boston increased by .2 years from 1950-60, any tract which did not at least match

this increase fell further down the educational scale. There are 43 tracts which changed by .2 years or less, or decreased, and 20 which increased by .3 years or more and hence bettered the increase for the city as a whole.

Table IV-5 presents Table IV-4 grouped according to whether the tract change failed to equal, equalled, or exceeded the change for the city of Boston. Of the 24 tracts that filtered-down, most of them did not match or exceed the Boston increase, and the same is true for the 2 tracts which filtered-up. There seems to be a strong connection between the median rent and the educational level, but no connection between the filtering process and the educational level.

6. TURNOVER

Turnover is the number of people in each tract who moved between 1955 and 1960. At first it was thought that turnover rates would have to be high in order for filtering to take place. This notion was changed because the turnover rate was high in every tract in the city.

Table IV-6. Kind of Filtering According to Turnover Rates

Turnover Rate (%)	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
above 70	1	0	1	0
60-69.9	3	2	1	0
50-59.9	14	6	7	1
40-49.9	29	8	19	2
30-39.9	13	6	7	0
20-29.9	3	2	1	0
TOTAL	63	24	36	3

Source: Calculated from: U.S. Bureau of the Census.

U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office, Washington, D.C., 1962.

There does not seem to be any validity to the hypothesis that the higher the turnover rate, the more the filtering process will operate. Technically, a house could filter either up or down without a change of occupancy, because filtering is defined in terms of a change in rent level. There seems to be no connection between the filtering process and turnover rates.

7. INCOME CHANGES AND RENT-INCOME RATIOS

Using the Consumer Price Index, changes in real income were examined on a tract basis 1950-60, using the median income. Over the decade real income increased in every tract except two and in these two tracts it decreased by 1 percent and 0.4 percent. Table IV-7 indicates the change in real income.

Table IV-7. Kind of Filtering by Change in Real Income

% Change in Real Income	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
decreased	2	2	0	0
0% to 9%	4	1	3	0
10% to 19%	5	2	3	0
20% to 29%	10	7	3	0
30% to 39%	14	3	11	0
40% to 49%	15	5	9	1
50% to 59%	7	3	3	1
60% to 69%	4	1	2	1
70% to 79%	1	0	1	0
TOTAL	62*	24	35	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office, Washington, D.C., 1962, and similar 1950 volume.

* One tract was excluded because no median was available since the base was less than 500

As a basis for comparison, the median income for the city of Boston increased by 33 percent over the decade. On the whole, real income increased slightly less than the city average in those tracts which filtered-down, roughly the same or slightly more in those tracts which did not filter, and more than the city average in the 3 tracts which filtered-up.

One reason for looking at median incomes was to determine what took place in the denominator of the rent-income ratio. Table IV-8 presents the percentage change in rent-income ratios from 1950-60. In each tract the rent-income ratio was calculated using the median rent and the median income.

Table IV-8.. Kind of Filtering by Change in the Rent-Income Ratio, 1950-60

% change in Rent-Income Ratio, 1950-60	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
-4% to -4.9%	1	1	0	0
-2% to -3.9%	4	4	0	0
plus or minus 1.9%	49	17	29	3
2% to 3.9%	6	2	4	0
4% to 5.9%	2	0	2	0
TOTAL	62*	24	35	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office Washington, D.C., 1962, and similar 1950 volume.

*One tract was excluded because no median was available since base was less than 500

Since real income increased in most cases a decrease in the rent-income ratio means relatively less was spent on rent, or that rents did not rise as fast as incomes. If housing conditions stay the same, then people are getting more for their money, which is one aspect of filtering. As is pointed out later in this chapter, housing conditions improved very markedly. Overcrowding decreased and the number of substandard units decreased. Five tracts showed a decrease in the rent-income ratio and all five filtered-down.

An increase in the rent-income ratio means that relatively more was spent on rent, or that rents rose faster than incomes. Of the 8 tracts where the rent-income ratio increased, 2 filtered-down and 6 did not filter.

C. HOUSING CHARACTERISTICS

1. VACANCY RATES, 1950

It is a widely held theory that vacancy rates must be at least 5 or 6 percent before the filtering process will start to operate. It is argued that there must be a surplus of houses which can filter-down successively to the next lower level, and there must be a demand for these houses at the lower level.

As of 1950, only 3 tracts had vacancy rates of 5 percent or more and only 1 of these tracts filtered. This would seemingly cast some doubt on the hypothesis, but the vacancies, and hence the surplus, could have occurred later in the decade.

Table IV-9. Kind of Filtering by Vacancy Rates, 1950

Vacancy Rate 1950 (%)	Total No. of Tracts	Filtered-Down	Did Not Filter	Filtered-Up
5% or more	3	1	2	0
4% to 4.9%	2	0	2	0
3% to 3.9%	1	1	0	0
2% to 2.9%	12	7	5	0
1% to 1.9%	29	10	17	2
up to .9%	16	5	10	1
TOTAL	63	24	36	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Census of Population: 1950, Vol. III, Census Tract Statistics, Chapter 6, U.S. Government Printing Office, Washington, D.C., 1952.

Conditions in 1950 made vacancies few in number, and they might not have appeared until several years later. Rent control was in effect up to December, 1955 so that vacancy rates are somewhat unrealistic. Vacancies must have been created during the decade, because every tract lost population.

2. OVERCROWDING

Two indications of overcrowding are the number of units with 1.01 persons or more per room, and the median number of persons per unit. From data on these two conditions it appears that there was an over-all reduction in overcrowding. Only 2 tracts showed an increase in the number of units with 1.01 or more persons per room from 1950 to 1960, and 1 showed no change at all. Every tract showed a decrease in the median number of persons per unit from 1950 to 1960. What emerged was a strong verification of the thinning-out process,

but no significant connection between the kind of filtering and the amount of thinning-out. According to many definitions of filtering, those units where a great deal of space, relatively speaking, was gained for the same rent, filtered-down. According to the definition accepted for this thesis however, a change in the position of a tract in the distribution of rents as a whole is the measurement of filtering, and if a tract showed a decrease in overcrowding, it did not filter unless its position changed.

3. SUBSTANDARD HOUSING

"Substandard" in 1950 means the number of units that are dilapidated or have no private bath, and in 1960 it means units that are dilapidated plus non-dilapidated units lacking other plumbing facilities. These two particular definitions were chosen because they are comparable over both censuses.

Of the 63 tracts, 52 showed a decrease in the number of substandard units from 1950 to 1960. The number of substandard units declined in every tract in the median rent categories $25-$39 in 1960, and with one exception each in the categories $40-$49 and $50-$54. The percentage of substandard units was generally higher in the lower rent categories, something that would be expected, but in the particular decade under study, there appears to be no connection between the filtering process and substandard housing.

CHAPTER V

CONCLUSIONS

A. CONCLUSIONS FROM THE STUDY

1. The filtering process did operate among rental units in the city of Boston from 1950-60.

2. Real income increased slightly less than the city average in those tracts which filtered-down and slightly more than the city average in those tracts which did not filter.

3. In those tracts where the rent-income ratio decreased, there was a tendency for the tract to filter-down.

4. The data was inconclusive or there were not enough cases to determine if there was any connection between the filtering process and any of the following characteristics: (1) a predominant foreign stock population, or (2) a large population decrease, or (3) a large Negro in-migration.

5. There appears to be no connection between the filtering process and any of the following characteristics: (1) the labor force composition of a tract, or (2) its educational level, or (3) the turnover rate.

6. Overcrowding and the number of substandard units generally decreased during the decade, but there appears to be no strong connection between the amount of decrease and the filtering process.

7. Even though vacancy rates in 1950 were low, the filtering process still operated, but vacancies must have

occurred during the decade because every tract studied lost population.

B. SOME IMPLICATIONS IN TERMS OF PUBLIC POLICY

That the filtering process did operate among rental units during the decade is probably the strongest conclusion of the study. The filtering process seems to hinge mostly on supply and demand. Public action can have a direct influence on the supply side, depending on the objective. For example, one of the objectives of the Boston Redevelopment Authority's preliminary plan for the South End is to make it a port of entry for low-income migrants into Boston. The proposal calls for several thousand housing units under Section 221d3 which at best, will be slightly higher than comparable rents in the area. The proposal also calls for extensive rehabilitation of the existing housing stock. Public policy in this case seems to be following conflicting paths. On the one hand, the objective calls for an in-migration of low-income people, which will tend to lower the average income of the area, and on the other hand, the proposal calls for new and rehabilitated units which will increase the average rent level. The rent-income ratio under these circumstances will rise rather than decrease and filtering-down is not likely to take place. The filtering process will apparently be operating at cross purposes to the urban renewal plan.

In terms of the type of code enforcement, if it is

desired to encourage the filtering-down process to operate in a given area, then code enforcement should be fairly lenient and only eliminate the worst conditions so as not to greatly decrease the supply.

C. SUGGESTIONS FOR FURTHER STUDY

There is a study being undertaken in New York City where 100 families who moved into new housing were interviewed as to where they had moved from, and then the people who moved into the units which the original 100 families had vacated were interviewed as to where they had moved from, and so on.[25] The difficulty with this approach is the enormous cost in terms of time and money.

An alternative approach would be to concentrate on just one census tract, or several blocks within one tract. This would permit more depth, but the results would be limited to a very small area. This kind of approach would lead to conclusions about the different changes that made up the net change in the tract.

Another approach would be to start with a hypothesis about any one of the population or housing characteristics and then seek to determine whether the hypothesis is valid. The results of the study undertaken in this thesis would indicate that many of the characteristics have no connection with the filtering process, but this was determined only

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[25]interview with Dr. Louis Winnick, May 2, 1963.

after the research was completed.

APPENDICES

APPENDIX A

OWNER-OCCUPIED UNITS

The study of owner-occupied units was undertaken concurrently with the study of rental units, and was continued until it proved to be unworkable. The same steps of elimination carried out for rental units in Chapter II were carried out for owner-occupied units, although they were carried out in a different order and with some modifications.

First, 'Crews on Vessels' in the 1960 census were eliminated.

Second, in any tract where there were less than 200 units, no median value was given. This step eliminated 101 tracts of the more than 150 in Boston. The 9 cases where the median value was given as either $5,000 minus or $20,000 plus or $25,000 plus were eliminated since there was no way to determine the extent of filtering.

Third, 31 tracts were eliminated because new construction amounted to one percent or more of the total number of owner-occupied units.

No tracts were eliminated because of public housing since it is in the rental market.

Only 15 tracts remained after the above steps of elimination. The next steps undertaken were similar to the ones carried out in Chapter III.

Table A-1 presents the number and percent of dwelling

Table A-1. Number and Percent of Dwelling and Housing Units in 1950 and 1960, grouped by the Median Value

Median Value (000) $	No. of Units 1960	% of Units 1960	No. of Units 1950	% of Units 1950
4 to 4.9	0	0	627	24.8
5 to 5.9	215	5.8	225	8.9
6 to 6.9	335	9.1	0	0
7 to 7.9	697	18.8	138	5.5
8 to 8.9	0	0	775	30.8
9 to 9.9	158	4.3	522	20.7
10 to 10.9	162	4.4	231	9.2
11 to 11.9	744	20.0	0	0
12 to 12.9	584	15.8	0	0
13 to 13.9	521	14.1	0	0
14 to 14.9	287	7.8	0	0
TOTAL	3,703	100.1	2,518	99.9

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing:1960. Census Tracts. Final Report PHC (1)--18, U.S. Government Printing Office Washington, D.C., 1962, and similar 1950 volume.

units in 1950 and housing units in 1960 broken down by value categories based on the median.

A striking difference between these two distributions is the two totals--an increase of about 47 percent. In both cases, value data is limited to one dwelling unit structures without businesses and where there is only one dwelling or housing unit on the property. The value data is based on the owner's estimate of what the property, including the land, would sell for under ordinary conditions and not at a forced sale.[26]

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[26]1960 Census of Population and Housing, Boston SMSA, Census tracts, p. 7.

The 1950 figure includes vacant units, while the 1960 figure does not. This should make the 1950 figure larger, not very much smaller as it is in this case. The change of definition from dwelling unit in 1950 to housing unit in 1960 should not affect owner units. New construction would make the 1960 figure slightly larger. The chief reason for the difference then, is probably the influence of rent control, because it encouraged many people to sell to their tenants.

The analysis of owner-occupied units was pushed further on the tentative assumption that the difference was not serious and that the units in 1950 and 1960 were comparable.

An index was computed from the means of the two distributions in order to convert to constant dollars. The index that was reached was 1.4, and if plus or minus five hundred dollars is taken as the dividing line, 4 tracts filtered-down, 9 did not filter, and 2 filtered-up. Even assuming that the method is feasible, despite the large difference in total units, another problem arises. The census data is presented for the tract as a whole. For rental units this presented no serious problem because they represent the largest portion in each tract, but the owner-occupied units represent only a small proportion of the total units in each tract. In 1950 the percentages ranged from 19.5 percent to 46.5 percent, and in 1960 they ranged from 18.9 percent to 47.7 percent.

At this point the analysis was abandoned.

APPENDIX B

KIND OF FILTERING ACCORDING TO THE INDEX NUMBER METHOD AND ACCORDING TO GREBLER'S PERCENTAGE METHOD

Filtered-Down

Tract	Difference in % by Grebler's Percentage Method	Difference in Constant Dollars by the Index Number Method
R 2	-15	-5
A 5	-12	-5
T 7B	-11	-4
U 6A	-11	-4
B 4	-10	-3
P 6	-9	-4
B 5B	-9	-3
B 1	-8	-3
X 5B	-7	-3
F 2	-7	-2
B 5A	-6	-2
A 6	-6	-2
E 1	-6	-2
T 7A	-6	-2
B 2	-5	-2
F 5	-5	-2
O 3	-5	-2
A 4	-5	-2
D 3	-5	-2
L 5	-5	-2
Q 4	-5	-2
Q 5	-5	-2
S 3	-4	-2
W 2	-4	-2

Did Not Filter

M 2	-3	-1
D 4	-3	-1
F 4	-3	-1
N 1	-3	-1
U 3	-3	-1
I 1	-2	-1
A 3	-2	-1
E 2	-2	-1
U 1	-2	-1
T 10	-2	-1

T 5B	-1	-1
M 1	-1	0
U 2	-1	0
V 4B	-1	0
Q 1	0	0
T 8B	0	0
P 2	1	0
P 3	1	0
T 2	1	0
X 4A	1	0
S 5	1	0
P 1A	2	0
N 3	2	0
P 1C	2	0
T 5A	2	0
P 4	2	1
T 4A	2	1
T 9	2	1
F 1	3	1
V 3	3	1
N 4	3	1
U 4	3	1
V 6	3	1
T 6	3	1
T 4B	3	1
X 1*	4	1
Filtered-Up		
P 5	5	2
S 4	6	2
S 6	8	3

Source: Calculated from: U.S. Bureau of the Census. U.S. Censuses of Population and Housing: 1960. Census Tracts. Final Report PHC (1)--18. U.S. Government Printing Office Washington, D.C., 1962. and similar 1950 volume.

* Tract X 1 was on the borderline and was put in the did not filter category

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